

2012 International Residential Code Overview of Changes

The *International Residential Code* (IRC) is a stand alone code that regulates the construction of detached one-and-two family dwellings and townhouses not more than three stories in height. There have been significant changes made to the IRC since the initial 2000 edition. This overview is intended to highlight many of the changes contained in the 2012 IRC.

New In the 2012 Edition

R302.5.1 – Garage Opening Protection (Doors between the garage and dwelling until now require self-closing devices.)

R303.5 and P3103.5 – Ventilation Intake Openings (The minimum vertical clearance between a contaminant source and an outdoor air intake below has increased from 2 feet to 3 feet.)

R308.4.6 – Glazing Adjacent Stairs and Ramps (For glazing that is not considered to be in a hazardous location, the rule for the minimum height above a tread at the side of a stairway is now 36 inches to correspond to the height of a guard as previously found in the exception. Other revisions to the text clarify the meaning and application of the glazing requirements at stairways.)

R308.4.7 – Glazing Adjacent to the Bottom Stair Landing (The provisions for glazing installed near the landing at the bottom of a stairway have been revised to clarify the application. The threshold for the minimum height above the walking surface is now 36 inches for determining that the glazing is not a hazardous location.)

R314.5 – Interconnection (The code now specifically recognizes wireless technology in lieu of interconnection for smoke alarms installations in both new and existing dwelling units. The interconnection provisions have been moved out of the sections related to location and power source and places in a new section R314.5.)

R501.3 – Fire Protection on Floors (With some exceptions, the code now requires ½-inch gypsum board or equivalent material to be applied to the underside of floor assemblies in buildings regulated by the IRC.)

R602.1.1 – End-Jointed Lumber (End-jointed lumber used in fire-rated assemblies must have HRA on the grade mark.)

R802.11.1 – Roof Uplift Resistance (The provisions for roof connections to resist wind uplift forces have been updated to current standards and simplified for ease of use. Table R802.11 has been replaced to provide accurate values for both low- and high-slope roofs in Wind Exposure Categories B and C.)

R1005.7 – Factory-Built Chimney Offsets (Factory-built chimney assemblies must be installed vertically with no offsets greater than 30 degrees. No more than four elbows are permitted within entire length of the chimney assembly.)

M1502.4.2 – Duct Installation (The maximum support spacing for dryer exhaust ducts has increased from 4 feet to 12 feet. Dryer exhaust ducts now specifically require mechanical fastening. Screw fasteners are permitted to penetrate the exhaust duct no more than 1/8 inch. The maximum specified length of dryer exhaust duct has been increased from 25 to 35 feet and now matches the corresponding dryer exhaust provisions of the IMC, IFGC, and the IRC fuel-gas provisions.)

M1506 – Exhaust Openings (Minimum clearances between air exhaust terminations and openings into the building have been introduced into the IRC.)

P2801.5 – Required Water Heater Pan (The provisions for safety pans under water heaters have been clarified by prescribing such protection for water heaters with storage tanks only. Tankless water heaters do not require pans.)

2012 International Residential Code Proposed Amendments

Note: An asterisk at the beginning of a section identifies a new amendment with the 2012 code edition.

- B. The International Residential Code adopted by reference in Section 101.2, 2012 International Building Code, is hereby amended as follows:
1. Section R102.4 (Referenced codes and standards) is amended by adding the following to said section:

“Any reference to the *ICC Electrical Code* shall mean the *National Electrical Code*, as adopted and amended by the City of College Station.”

(Reason: The City of College Station has adopted the *National Electrical Code* to regulate electrical installations.)
 2. Section R105.2 (Work exempt from permit) is amended by deleting number one under “Building” and replacing it with the following:

“1. One detached accessory structure per residential lot, provided the floor area does not exceed 120 square feet and the structure complies with all of the following:

 - a. The accessory structure is not located in a surface drainage easement.
 - b. The accessory structure is not permanently affixed to the ground.
 - c. The accessory structure is located in the rear yard.
 - d. The accessory structure is not provided with utilities (sewer, water, gas or electricity).”

(Reason: this amendment allows a small accessory structure without utilities in the rear yard. Area restriction is consistent with language in the IBC.)
 3. Section R105.2 under Building is amended by deleting the section in its entirety and replacing with the following:

“10. Uncovered decks, patios or other raised floor surfaces located not more than 30 inches above adjacent grade and are not attached to a dwelling.”

(Reason: Guardrail provisions become effective on decks, porches or other raised surfaces that are located more than 30 inches from adjacent grade.)
 4. Section R105.2.4 is added to read as follows:

“**R105.2.4 Homeowner permit.** A property owner may obtain a building permit to perform work on a building owned and occupied by him as his homestead without registering with the City as a contractor. However, work involving the electrical, plumbing and mechanical systems must be permitted and installed by licensed contractors.”

(Reason: Allows a homeowner to obtain a building permit for work on his homestead.)
 5. Section R106.3.1 (Approval of construction documents) is amended by deleting the last sentence in said section.

(Reason: The last sentence requires one set of construction documents be returned to the applicant and kept at the site during construction. It is not consistent with local practice to require two sets of construction documents, returning one set to the applicant, for 1 & 2 family dwellings.)
 6. Section R108.3 (Building permit valuations) is amended by adding the following to said section:

“If, in the opinion of the building official, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the building official. Final permit valuation shall be set by the building official.”

(Reason: Gives the building official final authority on permit valuations. This change also makes IRC language consistent with the IBC on this issue.)

7. Section R108.5 (Refunds) is amended by deleting the text in said section and replacing it with the following:

“The City Manager or his designee is authorized to establish a refund policy.”

(Reason: A refund policy for permit fees already exists. This amendment also makes the fee refund requirement consistent with the other I-Codes)

8. Section R112 (Board of Appeals) is amended by deleting the section in its entirety.

(Reason: The City has already provided for the establishment of the Construction Board of Adjustments and Appeals in Section 1(A), Chapter 3, College Station Code of Ordinances.)

9. Section R202 (Definitions) is also amended by adding the following definitions:

Air Gap, Irrigation System. A complete physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel.

Atmospheric Vacuum Breaker. An assembly containing an air inlet valve, a check seat, and an air inlet port. The flow of water into the body causes the air inlet valve to close the air inlet port. When the flow of water stops the air inlet valve falls and forms a check against back-siphonage. At the same time it opens the air inlet port allowing air to enter and satisfy the vacuum. Also known as an Atmospheric Vacuum Breaker Back-Siphonage Prevention Assembly.

Backflow Prevention, Irrigation System. The mechanical prevention of reverse flow, or back siphonage, of nonpotable water from an irrigation system into the potable water source.

Backflow Prevention Assembly. Any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

Completion of Irrigation System Installation. When the landscape irrigation system has been installed, all minimum standards met, all tests performed, and the irrigator is satisfied that the system is operating correctly.

Consulting, Irrigation System. The act of providing advice, guidance, review or recommendations related to landscape irrigation systems.

Cross-Connection. An actual or potential connection between a potable water source and an irrigation system that may contain contaminants or pollutants or any source of water that has been treated to a lesser degree in the treatment process.

Design, Irrigation System. The act of determining the various elements of a landscape irrigation system that will include, but not be limited to, elements such as collecting site specific information, defining the scope of the project, defining plant watering needs, selecting and laying out emission devices, locating system components, conducting hydraulics calculations, identifying any local regulatory requirements, or scheduling irrigation work at a site. Completion of the various components will result in an irrigation plan.

Design Pressure, Irrigation System. The pressure that is required for an emission device to operate properly. Design pressure is calculated by adding the operating pressure necessary at an emission device to the total of all pressure losses accumulated from an emission device to the water source.

Double Check Valve. An assembly that is composed of two independently acting, approved check valves, including tightly closed resilient seated shutoff valves attached at

each end of the assembly and fitted with properly located resilient seated test cocks. Also known as a Double Check Valve Backflow Prevention Assembly.

Emission Device. Any device that is contained within an irrigation system and that is used to apply water. Common emission devices in an irrigation system include, but are not limited to, spray and rotary sprinkler heads, and drip irrigation emitters.

Employed, Irrigation Systems. Engaged or hired to provide consulting services or perform any activity relating to the sale, design, installation, maintenance, alteration, repair, or service to irrigation systems. A person is employed if that person is in an employer-employee relationship as defined by Internal Revenue Code, 26 United States Code Service, §3212(d) based on the behavioral control, financial control, and the type of relationship involved in performing employment related tasks.

Head-to-Head Spacing, Irrigation System. The spacing of spray or rotary heads equal to the manufacturer's published radius of the head.

Health Hazard, Irrigation System. A cross-connection or potential cross-connection with an irrigation system that involves any substance that may, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

Hydraulics. The science of dynamic and static water; the mathematical computation of determining pressure losses and pressure requirements of an irrigation system.

Installer, Irrigation System. A person who actually connects an irrigation system to a private or public raw or potable water supply system or any water supply, who is licensed according to Title 30, Texas Administrative Code, Chapter 30 (relating to Occupational Licenses and Registrations).

Irrigation Inspector. A person who inspects irrigation systems and performs other enforcement duties for a municipality or water district as an employee or as a contractor and is required to be licensed under Title 30, Texas Administrative Code, Chapter 30 (relating to Occupational Licenses and Registrations).

Irrigation Plan. A scaled drawing of a landscape irrigation system which lists required information, the scope of the project, and represents the changes made in the installation of the irrigation system.

Irrigation Services. Selling, designing, installing, maintaining, altering, repairing, servicing, permitting, providing consulting services regarding, or connecting an irrigation system to a water supply.

Irrigation System. An assembly of component parts, including the backflow device and all equipment downstream, that is permanently installed for the controlled distribution and conservation of water to irrigate any type of landscape vegetation in any location, and/or to reduce dust or control erosion. This term does not include a system that is used on or by an agricultural operation as defined by Texas Agricultural Code, §251.002.

Irrigation Technician. A person who works under the supervision of a licensed irrigator to install, maintain, alter, repair, service or supervise installation of an irrigation system, including the connection of such system in or to a private or public, raw or potable water supply system or any water supply, and who is required to be licensed under Title 30, Texas Administrative Code, Chapter 30 (relating to Occupational Licenses and Registrations).

Irrigation Zone. A subdivision of an irrigation system with a matched precipitation rate based on plant material type (such as turf, shrubs, or trees), microclimate factors (such as sun/shade ratio), topographic features (such as slope) and soil conditions (such as sand, loam, clay, or combination) or for hydrological control.

Irrigator. A person who sells, designs, offers consultations regarding, installs, maintains, alters, repairs, services or supervises the installation of an irrigation system, including the connection of such system to a private or public, raw or potable water supply system or any water supply, and who is required to be licensed under Title 30, Texas Administrative Code, Chapter 30.

Irrigator-in-Charge. The irrigator responsible for all irrigation work performed by an

exempt business owner, including, but not limited to obtaining permits, developing design plans, supervising the work of other irrigators or irrigation technicians, and installing, selling, maintaining, altering, repairing, or servicing a landscape irrigation system.

Landscape Irrigation. The science of applying the necessary amount of water to promote or sustain healthy growth of plant material or turf.

Irrigation License. An occupational license that is issued by the Texas Commission on Environmental Quality under Title 30, Texas Administrative Code, Chapter 30 to an individual that authorizes the individual to engage in an activity that is covered by Title 30, Texas Administrative Code, Chapter 30.

Mainline, Irrigation System. A pipe within an irrigation system that delivers water from the water source to the individual zone valves.

Maintenance Checklist, Irrigation System. A document made available to the irrigation system's owner or owner's representative that contains information regarding the operation and maintenance of the irrigation system, including, but not limited to: checking and repairing the irrigation system, setting the automatic controller, checking the rain or moisture sensor, cleaning filters, pruning grass and plants away from irrigation emitters, using and operating the irrigation system, the precipitation rates of each irrigation zone within the system, any water conservation measures currently in effect from the water purveyor, the name of the water purveyor, a suggested seasonal or monthly watering schedule based on current evapotranspiration data for the geographic region, and the minimum water requirements for the plant material in each zone based on the soil type and plant material where the system is installed.

Major Maintenance, Alteration, Repair, or Service (Irrigation System). Any activity that involves opening to the atmosphere the irrigation main line at any point prior to the discharge side of any irrigation zone control valve. This includes, but is not limited to, repairing or connecting into a main supply pipe, replacing a zone control valve, or repairing a zone control valve in a manner that opens the system to the atmosphere.

Master Valve, Irrigation System. A remote control valve located after the backflow prevention device that controls the flow of water to the irrigation system mainline.

Matched Precipitation Rate. The condition in which all sprinkler heads within an irrigation zone apply water at the same rate.

New Installation, Irrigation System. An irrigation system installed at a location where one did not previously exist .

Pass-through Contract. A written contract between a contractor or builder and a licensed irrigator or exempt business owner to perform part or all of the irrigation services relating to an irrigation system.

Pressure Vacuum Breaker. An assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. Also known as a Pressure Vacuum Breaker Back-siphonage Prevention Assembly.

Reclaimed Water. Domestic or municipal wastewater which has been treated to a quality suitable for beneficial use, such as landscape irrigation.

Records of Landscape Irrigation Activities. The irrigation plans, contracts, warranty information, invoices, copies of permits, and other documents that relate to the installation, maintenance, alteration, repair, or service of a landscape irrigation system.

Reduced Pressure Principle Backflow Prevention Assembly. An assembly containing two independently acting approved check valves together with a hydraulically operating mechanically independent pressure differential relief valve located between the two check valves and below the first check valve.

Static Water Pressure. The pressure of water when it is not moving.

Supervision, Landscape Irrigation. The on-the-job oversight and direction by a licensed irrigator who is fulfilling his or her professional responsibility to the client and/or employer in compliance with local or state requirements. Also a licensed installer working under the direction of a licensed irrigator or an irrigation technician who is working under

the direction of a licensed irrigator to install, maintain, alter, repair or service an irrigation system.

Water Conservation, Irrigation System. The design, installation, service, and operation of an irrigation system in a manner that prevents the waste of water, promotes the most efficient use of water, and applies the least amount of water that is required to maintain healthy individual plant material or turf, reduce dust, and control erosion.

Zone Flow. A measurement, in gallons per minute or gallons per hour, of the actual flow of water through a zone valve, calculated by individually opening each zone valve and obtaining a valid reading after the pressure has stabilized. For design purposes, the zone flow is the total flow of all nozzles in the zone at a specific pressure.

Zone Valve, Irrigation System. An automatic valve that controls a single zone of a landscape irrigation system.

10. Section R302.1 (Exterior walls) is amended by deleting the existing text and replacing it with the following:

R302.1 Exterior walls. Exterior walls with a fire separation distance less than 3 feet shall have not less than a one hour fire-resistive rating with exposure from both sides. The above provisions shall not apply to walls which are perpendicular to the line used to determine the fire separation distance.

Exception: Tool and storage sheds, playhouses and similar structures exempted from permits by Section R105.2 are not required to provide wall protection based on location on the lot.

Projections. Projections may extend beyond the exterior wall on zero lot line construction. Projections shall be constructed from non-combustible material on the underside and may allow manufactured perforated soffit material installed for attic ventilation.. The soffit may project a maximum of 18 inches, excluding non-combustible gutters, over the adjacent property line.

Exception: Tool and storage sheds, playhouses and similar structures exempted from permits by Section R 105.2 shall not extend over the lot line in zero lot line construction.

Combustibles in maintenance easement. The construction of any structure utilizing combustible material or the storage of combustible material is prohibited within the maintenance easement. The term “maintenance easement” is defined in Article 11 of the UDO.

Exception: A wood fence may be installed in the maintenance easement.

(Reason: Provides for protected overhangs on “zero lot line” construction.)

11. Section 302.2 (Townhouses) is amended by deleting the exception in the said section:

(Reason: The exception reduced the fire separation between units from 2-hour to 1-hour under the assumption that townhouses would be sprinklered in accordance with a later code section.)

12. Section R302.5 (Separation required) is amended by adding the following exception:

“Exception: One unprotected attic access opening, not exceeding 30 inches by 54 inches in size, is allowed per garage.”

13. Section R310.1.1 (Minimum opening area) is amended by deleting the section in its entirety.

(Reason: This change allows an egress opening to simply comply with the minimum opening dimensions - 20” wide X 24” high)

14. Section R311.7.8.2 (Continuity) is amended by deleting the following text in said section:

“Handrail ends shall be returned or shall terminate in newel posts or safety terminals.”

(Reason: It is not consistent with local practice to require handrails to be returned in residential construction.)

15. Section R313 (Automatic Sprinkler Systems) is amended by deleting the section in its entirety.

(Reason: State Law passed stating that municipalities could not require an automatic fire sprinkler system to be installed in one-and-two family dwellings.)

16. Section R318.2 (Chemical termiticide treatment) is amended by adding the following to the end of said section:

“The method of application and contractor hired to apply the chemicals shall submit to the Building Department when applying for the Building Permit, and verification of the application turned in prior to issuance of the Certificate of Occupancy.”

(Reason: This will allow the Building Department to verify that the structure has been treated for termites.)

17. Section R319.1 (Address numbers) is amended by deleting the existing text in its entirety and replacing it with the following:

“Premises identification shall comply with Section 501.2, International Building Code, as amended.”

(Reason: The IBC, as amended, provides a detailed standard for premises identification)

18. Section 322.2.1 (Elevation requirements) is amended by deleting the existing text, save the exception, and replacing it with the following:

“1. Buildings and structures shall have the lowest floors elevated in accordance with the City of College Station Code of Ordinances, Chapter 13 (Flood Hazard Protection) and the City of College Station Drainage Policy and Design Standards (refer to Section II.D).

2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated above the highest adjacent grade as the depth number specified in feet on the Flood Insurance Rate Maps, or at least 2 feet if a depth number is not specified, plus the additional footage requirements in the City of College Station Code of Ordinances, Chapter 13 (Flood Hazard Protection) and the City of College Station Drainage Policy and Design Standards (refer to Section II.D).

3. Basement floors that are below grade on all sides shall be elevated in accordance with the City of College Station Code of Ordinances, Chapter 13 (Flood Hazard Protection) and the City of College Station Drainage Policy and Design Standards (refer to Section II.D).

(Reason: The revised language eliminates potential conflicts between the IRC and the City’s Floodplain Ordinance.)

19. Section R403.1.3.2 (Slabs-on-ground with turned-down footings) is amended by deleting the existing text and replacing it with the following to read as follows:

“All slabs-on-ground with turned-down footings shall comply with the minimum foundation standard in Section 1910.2, International Building Code.”

(Reason: Section 1907.2, IBC, references the minimum foundation standard specifically developed for use in this area.)

20. Chapter 11 (Energy Efficiency) is amended by deleting this chapter in its entirety and replacing it with the following.

“One-and-two family dwellings shall comply with the 2009 International Energy Conservation Code as amended.”

(Reason: The International Energy Conservation Code and Chapter 11 read the same, and the State Energy Lab recommended amendments to the International Energy Conservation Code. So to keep from amending both parts we deleted Chapter 11.)

21. Section M1411.3 (Condensate disposal) is amended by deleting the existing text and replacing with the following:

“Condensate from all cooling coils or evaporators shall be conveyed from the drain pan outlet to the sanitary sewer system, if available. The condensate drain shall be connected to the sanitary sewer system in a manner approved by the code official.

Exception: When a sanitary sewer system is not available on the premises, or connection thereto is not practical, the condensate shall discharge into an approved french drain.”

(Reason: This amendment provides more specific requirements for the method of condensate disposal.)

22. Section M1501.1 (Outdoor discharge) is amended by deleting the last sentence in said section.

(Reason: It is common local practice to run the exhaust vents to the soffit and ridge vent to eliminate another roof penetration.)

23. Section M1507.2 (Recirculation of air) is amended by deleting the last sentence in said section, and replacing it with the following:

“Exhaust air from bathrooms and toilet rooms shall discharge directly to the outdoors or the vent termination shall be unobstructed and within 6 inches of the soffit vent or ridge vent.”

(Reason: This amendment provides specific requirements if the exhaust air is to discharge in the attic, and will remain consistent with common local practice.)

24. Section G2408.3 (Private garages) is amended by deleting the section in its entirety.

(Reason: It is not consistent with local practice to require appliances located in private garages to be installed 6 feet above the floor.)

25. Section G2414.5.2 (Copper tubing) is amended by deleting said section in its entirety.

(Reason: Gas may have a corrosive effect on copper pipe and tubing.)

26. Section G2417.1.2 (Repairs and additions) is amended by deleting the existing text in its entirety and replacing it with the following:

“In the event repairs or additions are made after the pressure test, the affected piping shall be tested. If approved by the code official, minor repairs and additions are not required to be pressure tested provided the work is inspected and connections are tested with a noncorrosive leak-detecting fluid or other leak detecting methods.”

(Reason: As written, the code would allow gas pipe repairs and additions to be tested with a soap solution. This amendment provides the code official with the discretion to require a pressure test if deemed appropriate. This amendment is also consistent with a similar amendment to the IFGC.)

27. Section G2417.4 (Test pressure measurement) is amended by deleting the existing text in its entirety and replacing it with the following:

“Test pressure measurement shall comply with Section 406.4, 2006 International Fuel Gas Code, as amended.”

(Reason: This amendment provides for the use of the more accurate diaphragm gauge for gas tests on systems operating at 5 psi or less.)

28. Section G2417.4.1 (Test pressure) is amended by deleting the existing text in its entirety and replacing it with the following:

“Test pressure shall comply with Section 406.4, 2009 International Fuel Gas Code, as amended.”

(Reason: This amendment provides for an elevated standard for gas pressure tests. It is also consistent with pressure test amendments from previous code editions.)

29. Section P2503.8 (Inspection and testing of backflow prevention devices) is amended by deleting the section in its entirety and replacing with the following:

“Inspection and testing of backflow prevention devices shall comply with Section 312.10, 2012 International Plumbing Code, as amended.”

(Reason: Consistent with City Council’s direction concerning backflow prevention devices.)

30. P2803.6.1 (Requirements for discharge pipe) is amended by deleting number five and replacing it with the following:

“Discharge to an indirect waste receptor or to the outdoors.”

(Reason: This removes the language that allows the discharge pipe to terminate to the pan serving the water heater.)

31. Section P2902.5.3 (Lawn irrigation systems) is amended by deleting the existing text in its entirety and replacing it with the following:

“P2902.5.3 Lawn Irrigation Systems

P2902.5.3.1 Valid License Required. Any person who connects an irrigation system to the water supply within the city or the city’s extraterritorial jurisdiction, commonly referred to as the ETJ, must hold a valid license, as defined by Title 30, Texas Administrative Code, Chapter 30 and required by Chapter 1903 of the Texas Occupations Code, or as defined by Chapter 365, Title 22 of the Texas Administrative Code and required by Chapter 1301 of the Texas Occupations Code.

Exception: A property owner is not required to be licensed in accordance with Texas Occupations Code, Title 12, §1903.002(c)(1) if he or she is performing irrigation work in a

building or on a premises owned or occupied by the person as the person's home. A home or property owner who installs an irrigation system must meet the standards contained in Title 30, Texas Administrative Code, Chapter 344 regarding spacing, water pressure, spraying water over impervious materials, rain or moisture shut-off devices or other technology, backflow prevention and isolation valves. See Texas Occupations Code §1903.002 for other exemptions to the licensing requirement.

P2902.5.3.2 Permit Required. Any person installing an irrigation system within the territorial limits or extraterritorial jurisdiction of the city is required to obtain a permit from the city prior to beginning work on the irrigation system. A completed irrigation permit application and irrigation plan must be submitted to the city and approved before a permit will be issued by the city. The irrigation plan must be in compliance with the requirements of this section.

Exceptions:

- (1) An irrigation system that is an on-site sewage disposal system, as defined by Section 366.002, Health and Safety Code; or
- (2) An irrigation system used on or by an agricultural operation as defined by Section 251.002, Agriculture Code; or
- (3) An irrigation system connected to a groundwater well used by a property owner strictly for domestic use.

P2902.5.3.3 Backflow Prevention Methods and Devices. Any irrigation system that is connected to the potable water supply must be connected through a backflow prevention method approved by the Texas Commission on Environmental Quality (TCEQ). The backflow prevention device must be approved by the Foundation for Cross-Connection Control and Hydraulic Research, the University of Southern California, the International Plumbing Code, or any other laboratory that has equivalent capabilities for both the laboratory and field evaluation of backflow prevention assemblies. The backflow prevention device must be installed in accordance with the laboratory approval standards or if the approval does not include specific installation information, the manufacturer's current published recommendations. If conditions that present a health hazard exist, one of the following methods must be used to prevent backflow;

- (1) An air gap may be used if:
 - (a) there is an unobstructed physical separation; and
 - (b) the distance from the lowest point of the water supply outlet to the flood rim of the fixture or assembly into which the outlet discharges is at least one inch or twice the diameter of the water supply outlet, whichever is greater.
- (2) Reduced pressure principle backflow prevention assemblies may be used if:
 - (a) the device is installed at a minimum of 12 inches above ground in a location that will ensure that the assembly will not be submerged; and
 - (b) drainage is provided for any water that may be discharged through the assembly relief valve.
- (3) Atmospheric vacuum breakers may only be used as replacements on existing systems utilizing atmospheric vacuum breakers if:
 - (a) no back-pressure will be present;
 - (b) there are no shutoff valves downstream from the atmospheric vacuum breaker;
 - (c) the device is installed at a minimum of six inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler;
 - (d) there is no continuous pressure on the supply side of the atmospheric vacuum breaker for more than 12 hours in any 24-hour period; and
 - (e) a separate atmospheric vacuum breaker is installed on the discharge side of each irrigation control valve, between the valve and all the emission devices that the valve controls.
- (4) Pressure vacuum breakers may be used if:

(a) no back-pressure condition will occur; and

(b) the device is installed at a minimum of 12 inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler.

All backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.

If there are no conditions that present a health hazard, double check valve backflow prevention assemblies may be used to prevent backflow if the device is tested upon installation and test cocks are used for testing only. A double check valve may be installed below ground if:

(a) the double check valve assembly is installed in a vault or other approved enclosure that which is constructed of a durable material. The vault or enclosure shall either be of solid (waterproof) construction with an integral bottom or bottomless to facilitate drainage. If the vault or enclosure is bottomless, a minimum of four (4) inches of washed gravel shall be installed below the assembly. The washed gravel shall have a diameter of between 3/8 inch and 3/4 inch (inclusive);

(b) the test cocks are plugged with a non-ferrous material (brass, plastic, etc.) except when the double check valve is being tested;

(c) the test cock plugs are threaded, water-tight, and made of non-ferrous material;

(d) a y-type strainer is installed on the inlet side of the double check valve;

(e) a minimum clearance of three (3) inches is provided between any fill material and the bottom of the double check valve to allow space for testing and repair; and

(f) a minimum clearance of four (4) inches is provided on the sides of the double check valve to test and repair the double check valve.

If an existing irrigation system without a backflow-prevention assembly requires major maintenance, alteration, repair, or service, the system must be connected to the potable water supply through an approved, properly installed backflow prevention method before any major maintenance, alteration, repair, or service is performed.

If an irrigation system is connected to a potable water supply through a double check valve, pressure vacuum breaker, or reduced pressure principle backflow assembly and includes an automatic master valve on the system, the automatic master valve must be installed on the discharge side of the backflow prevention assembly.

The irrigator shall ensure the backflow prevention device is tested by a licensed Backflow Prevention Assembly Tester prior to being placed in service. The tester must be registered with the City of College Station and the test results must be provided to the local water purveyor and the irrigation system's owner or owner's representative within ten business days of testing of the backflow prevention device.

P2902.5.3.4 Specific Conditions and Cross-Connection Control. Before any chemical is added to an irrigation system connected to the potable water supply, the irrigation system must be connected through a reduced pressure principle backflow prevention assembly or air gap.

Connection of any additional water source to an irrigation system that is connected to the potable water supply can only be done if the irrigation system is connected to the potable water supply through a reduced-pressure principle backflow prevention assembly or an air gap.

Irrigation system components with chemical additives induced by aspiration, injection, or emission system connected to any potable water supply must be connected through a reduced pressure principle backflow device.

If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Title 30, Texas Administrative Code, Chapter 285, then:

(1) all irrigation piping and valves must meet the separation distances from the On-Site Sewage Facilities system as required for a private water line in Title 30, Texas Administrative Code, Section 285.91(10);

(2) any connections using a private or public potable water source that is not the city's

potable water system must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in Title 30, Texas Administrative Code, Section 344.50; and

(3) any water from the irrigation system that is applied to the surface of the area utilized by the On-Site Sewage Facility system must be controlled on a separate irrigation zone or zones so as to allow complete control of any irrigation to that area so that there will not be excess water that would prevent the On-Site Sewage Facilities system from operating effectively.

P2902.5.3.5 Water Conservation. All irrigation systems shall be designed, installed, maintained, altered, repaired, serviced, and operated in a manner that will promote water conservation as defined in the Definitions section of this ordinance.

P2902.5.3.6 Irrigation Plan Design. An irrigator shall prepare an irrigation plan for each site where a new irrigation system will be installed. A paper or electronic copy of the irrigation plan must be on the job site at all times during the installation of the irrigation system. A drawing showing the actual installation of the system is due to each irrigation system owner after all new irrigation system installations. During the installation of the irrigation system, variances from the original plan may be authorized by the licensed irrigator if the variance from the plan does not:

- (1) diminish the operational integrity of the irrigation system;
- (2) violate any requirements of this ordinance; and
- (3) go unnoted in red on the irrigation plan.

The irrigation plan must include complete coverage of the area to be irrigated. If a system does not provide complete coverage of the area to be irrigated, it must be noted on the irrigation plan.

All irrigation plans used for construction must be drawn to scale. The plan must include, at a minimum, the following information:

- (1) the irrigator's seal, signature, and date of signing;
- (2) all major physical features and the boundaries of the areas to be watered;
- (3) a North arrow;
- (4) a legend;
- (5) the zone flow measurement for each zone;
- (6) location and type of each:
 - (a) controller; and
 - (b) sensor (for example, but not limited to, rain, moisture, wind, flow, or freeze);
- (7) location, type, and size of each:
 - (a) water source, such as, but not limited to a water meter and point(s) of connection;
 - (b) backflow prevention device;
 - (c) water emission device, including, but not limited to, spray heads, rotary sprinkler heads, quick-couplers, bubblers, drip, or micro-sprays;
 - (d) valve, including but not limited to, zone valves, master valves, and isolation valves;
 - (e) pressure regulation component; and
 - (f) main line and lateral piping.
- (8) the scale used; and
- (9) the design pressure.

P2902.5.3.7 Design and Installation. No irrigation design or installation shall require the use of any component, including the water meter, in a way which exceeds the manufacturer's published performance limitations for the component.

P2902.5.3.7.1 Spacing. The maximum spacing between emission devices must not exceed the manufacturer's published radius or spacing of the device(s). The radius or spacing is

determined by referring to the manufacturer's published specifications for a specific emission device at a specific operating pressure. New irrigation systems shall not utilize above-ground spray emission devices in landscapes that are less than 48 inches not including the impervious surfaces in either length or width and which contain impervious pedestrian or vehicular traffic surfaces along two or more perimeters. If pop-up sprays or rotary sprinkler heads are used in a new irrigation system, the sprinkler heads must direct flow away from any adjacent surface and shall not be installed closer than four inches from a hardscape, such as, but not limited to, a building foundation, fence, concrete, asphalt, pavers, or stones set with mortar.

Exception:

Narrow paved walkways, jogging paths, golf cart paths or other small areas located in cemeteries, parks, golf courses or other public areas if the runoff drains into a landscaped area.

P2902.5.3.7.2 Water Pressure. Emission devices must be installed to operate at the minimum and not above the maximum sprinkler head pressure as published by the manufacturer for the nozzle and head spacing that is used. Methods to achieve the water pressure requirements include, but are not limited to, flow control valves, a pressure regulator, or pressure compensating spray heads.

P2902.5.3.7.3 Piping. Piping in irrigation systems must be designed and installed so that the flow of water in the pipe will not exceed a velocity of five feet per second for polyvinyl chloride (PVC) pipe.

P2902.5.3.7.4 Irrigation Zones. Irrigation systems shall have separate zones based on plant material type, microclimate factors, topographic features, soil conditions, and hydrological requirements.

P2902.5.3.7.5 Matched Precipitation Rate. Zones must be designed and installed so that all of the emission devices in that zone irrigate at the same precipitation rate.

P2902.5.3.7.6 Impervious Surfaces. Irrigation systems shall not spray water over surfaces made of concrete, asphalt, brick, wood, stones set with mortar, or any other impervious material, such as, but not limited to, walls, fences, sidewalks, streets, etc.

P2902.5.3.7.7 Master Valve. When provided, a master valve shall be installed on the discharge side of the backflow prevention device on all new installations.

P2902.5.3.7.8 PVC Pipe Primer Solvent. All new irrigation systems that are installed using PVC pipe and fittings shall be primed with a colored primer prior to applying the PVC cement in accordance with the International Plumbing Code (Section 605).

P2902.5.3.7.9 Rain or Moisture Sensor. All new automatically controlled irrigation systems must include sensors or other technology designed to inhibit or interrupt operation of the irrigation system during periods of moisture or rainfall. Rain or moisture shut-off technology must be installed according to the manufacturer's published recommendations. Repairs to existing automatic irrigation systems that require replacement of an existing controller must include a sensor or other technology designed to inhibit or interrupt operation of the irrigation system during periods of moisture or rainfall.

P2902.5.3.7.10 Isolation Valve. All new irrigation systems must include an isolation valve between the water meter and the backflow prevention device.

P2902.5.3.7.11 Depth Coverage of Piping. Piping in all irrigation systems must be installed

according to the manufacturer's published specifications for depth coverage of piping. If the manufacturer has not published specifications for depth coverage of piping, the piping must be installed to provide minimum depth coverage of six inches of select backfill, between the top of the pipe and the natural grade of the topsoil. All portions of the irrigation system that fail to meet this standard must be noted on the irrigation plan. If the area being irrigated has rock at a depth of six inches or less, select backfill may be mounded over the pipe. Mounding must be noted on the irrigation plan and discussed with the irrigation system owner or owner's representative to address any safety issues. If a utility, man-made structure or roots create an unavoidable obstacle, which makes the six-inch depth coverage requirement impractical, the piping shall be installed to provide a minimum of two inches of select backfill between the top of the pipe and the natural grade of the topsoil. All trenches and holes created during installation of an irrigation system must be backfilled and compacted to the original grade.

P2902.5.3.7.12 Irrigation System Wiring. Underground electrical wiring used to connect an automatic controller to any electrical component of the irrigation system must be listed by Underwriters Laboratories as acceptable for burial underground. Electrical wiring that connects any electrical components of an irrigation system must be sized according to the manufacturer's recommendation. Electrical wire splices which may be exposed to moisture must be waterproof as certified by the wire splice manufacturer. Underground electrical wiring that connects an automatic controller to any electrical component of the irrigation system must be buried with a minimum of six inches of select backfill.

P2902.5.3.13 Irrigation System Water. Water contained within the piping of an irrigation system is deemed to be non-potable. No drinking or domestic water usage, such as, but not limited to, filling swimming pools or decorative fountains, shall be connected to an irrigation system. If a hose bib (an outdoor water faucet that has hose threads on the spout) is connected to an irrigation system for the purpose of providing supplemental water to an area, the hose bib must be installed using a quick coupler key on a quick coupler installed in a covered purple valve box and the hose bib and any hoses connected to the bib must be labeled "non potable, not safe for drinking." An isolation valve must be installed upstream of a quick coupler connecting a hose bib to an irrigation system.

P2902.5.3.7.14 Licensed Person On Site During Installation. Beginning January 1, 2010, either a licensed irrigator or a licensed irrigation technician shall be on-site at all times while the landscape irrigation system is being installed. When an irrigator is not onsite, the irrigator shall be responsible for ensuring that a licensed irrigation technician is on-site to supervise the installation of the irrigation system.

P2902.5.3.8 Completion of Irrigation System Installation. Upon completion of the irrigation system, the irrigator or irrigation technician who provided supervision for the on-site installation shall be required to complete the following four items:

- (1) a final walk through with the irrigation system's owner or the owner's representative to explain the operation of the system;
- (2) The maintenance checklist on which the irrigator or irrigation technician shall obtain the signature of the irrigation system's owner or owner's representative and shall sign, date, and seal the checklist. If the irrigation system's owner or owner's representative is unwilling or unable to sign the maintenance checklist, the irrigator shall note the time and date of the refusal on the irrigation system's owner or owner's representative's signature line. The irrigation system owner or owner's representative will be given the original maintenance checklist and a duplicate copy of the maintenance checklist shall be maintained by the irrigator.

The items on the maintenance checklist shall include but are not limited to:

- (a) the manufacturer's manual for the automatic controller, if the system is automatic;
- (b) a seasonal (spring, summer, fall, winter) watering schedule based on either

current/real time evapotranspiration or monthly historical reference evapotranspiration (historical ET) data, monthly effective rainfall estimates, plant landscape coefficient factors, and site factors;

(c) a list of components, such as the nozzle, or pump filters, and other such components; that require maintenance and the recommended frequency for the service; and

(d) the statement, "This irrigation system has been installed in accordance with all applicable state and local laws, ordinances, rules, regulations or orders. I have tested the system and determined that it has been installed according to the Irrigation Plan and is properly adjusted for the most efficient application of water at this time."

(3) A permanent sticker which contains the irrigator's name, license number, company name, telephone number and the dates of the warranty period shall be affixed to each automatic controller installed by the irrigator or irrigation technician. If the irrigation system is manual, the sticker shall be affixed to the original maintenance checklist. The information contained on the sticker must be printed with waterproof ink and include:

(4) The irrigation plan indicating the actual installation of the system must be provided to the irrigation system's owner or owner representative.

P2902.5.3.9 Maintenance, Alteration, Repair, or Service of Irrigation Systems. The licensed irrigator is responsible for all work that the irrigator performed during the maintenance, alteration, repair, or service of an irrigation system during the warranty period. The irrigator or business owner is not responsible for the professional negligence of any other irrigator who subsequently conducts any irrigation service on the same irrigation system.

All trenches and holes created during the maintenance, alteration, repair, or service of an irrigation system must be returned to the original grade with compacted select backfill. Colored PVC pipe primer solvent must be used on all pipes and fittings used in the maintenance, alteration, repair, or service of an irrigation system in accordance with the adopted International Plumbing Code (Section 605).

When maintenance, alteration, repair or service of an irrigation system involves excavation work at the water meter or backflow prevention device, an isolation valve shall be installed, if an isolation valve is not present.

P2902.5.3.10 Reclaimed Water. Reclaimed water may be utilized in landscape irrigation systems if:

(1) there is no direct contact with edible crops, unless the crop is pasteurized before consumption;

(2) the irrigation system does not spray water across property lines that do not belong to the irrigation system's owner;

(3) the irrigation system is installed using purple components;

(4) the domestic potable water line is connected using an air gap or a reduced pressure principle backflow prevention device, in accordance with §290.47(i) of this title (relating to Appendices);

(5) a minimum of an eight inch by eight inch sign is prominently posted on/in the area that is being irrigated, that reads, "RECLAIMED WATER – DO NOT DRINK" ; and

(6) backflow prevention on the reclaimed water supply line shall be provided in accordance with the regulations of the city's water provider.

P2902.5.3.11 Advertisement Requirements. All vehicles used in the performance of irrigation installation, maintenance, alteration, repair, or service must display the irrigator's license number in the form of "LI_____" in a contrasting color of block letters at least two inches high, on both sides of the vehicle.

All forms of written and electronic advertisements for irrigation services must display the irrigator's license number in the form of "LI_____." Any form of advertisement, including business cards, and estimates which displays an entity's or individual's name other than that of the licensed irrigator must also display the name of the licensed

irrigator and the licensed irrigator's license number. Trailers that advertise irrigation services must display the irrigator's license number.

The name, mailing address, and telephone number of the commission must be prominently displayed on a legible sign and displayed in plain view for the purpose of addressing complaints at the permanent structure where irrigation business is primarily conducted and irrigation records are kept.

P2902.5.3.12 Contracts. All contracts to install an irrigation system must be in writing and signed by each party and must specify the irrigator's name, license number, business address, current business telephone numbers, the date that each party signed the agreement, the total agreed price, and must contain the statement, "Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), MC-178, P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's website is: www.tceq.state.tx.us."

All contracts must include the irrigator's seal, signature, and date.

All written estimates, proposals, bids, and invoices relating to the installation or repair of an irrigation system(s) must include the irrigator's name, license number, business address, current business telephone number(s), and the statement: "Irrigation in Texas is regulated by the Texas Commission On Environmental Quality (TCEQ) (MC-178), P.O. Box 13087, Austin, Texas 78711-3087. TCEQ's web site is: www.tceq.state.tx.us."

An individual who agrees by contract to provide irrigation services as defined in §344.30 of this title (relating to License Required) shall hold an irrigator license issued under Title 30, Texas Administrative Code, Chapter 30 (relating to Occupational Licenses and Registrations) unless the contract is a pass-through contract as defined in §344.1(36) of this title (relating to Definitions). If a pass-through contract includes irrigation services, then the irrigation portion of the contract can only be performed by a licensed irrigator. If an irrigator installs a system pursuant to a pass-through contract, the irrigator shall still be responsible for providing the irrigation system's owner or through contract, the irrigator shall still be responsible for providing the irrigation system's owner or owner's representative a copy of the warranty and all other documents required under this chapter. A pass-through contract must identify by name and license number the irrigator that will perform the work and must provide a mechanism for contacting the irrigator for irrigation system warranty work.

The contract must include the dates that the warranty is valid.

P2902.5.3.13 Warranties for Irrigation Systems. On all installations of new irrigation systems, an irrigator shall present the irrigation system's owner or owner's representative with a written warranty covering materials and labor furnished in the new installation of the irrigation system. The irrigator shall be responsible for adhering to terms of the warranty. If the irrigator's warranty is less than the manufacturer's warranty for the system components, then the irrigator shall provide the irrigation system's owner or the owner's representative with applicable information regarding the manufacturer's warranty period. The warranty must include the irrigator's seal, signature, and date. If the warranty is part of an irrigator's contract, a separate warranty document is not required.

An irrigator's written warranty on new irrigation systems must specify the irrigator's name, business address, and business telephone number(s), must contain the signature of the irrigation system's owner or owner's representative confirming receipt of the warranty and must include the statement: "Irrigation in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), MC-178, P.O. Box 130897, Austin, Texas 78711-3087. TCEQ's website is: www.tceq.state.tx.us."

On all maintenance, alterations, repairs, or service to existing irrigation systems, an irrigator shall present the irrigation system's owner or owner's representative a written document that identifies the materials furnished in the maintenance, alteration, repair, or service. If a warranty is provided, the irrigator shall abide by the terms. The warranty document must include the irrigator's name and business contact information.

P2902.5.3.14 Duties and Responsibilities of City Irrigation Inspectors. A licensed irrigation inspector or plumbing inspector shall enforce the ordinance of the city, and shall be responsible for:

- (1) verifying that the appropriate permits have been obtained for an irrigation system and that the irrigator and installer or irrigation technician, if applicable, are licensed;
- (2) inspecting the irrigation system;
- (3) determining that the irrigation system complies with the requirements of this section;
- (4) determining that the appropriate backflow prevention device was installed and tested;
- (5) investigating complaints related to irrigation system installation, maintenance, alteration, repairs, or service of an irrigation system and advertisement of irrigation services; and
- (6) maintaining inspection records according to this section.”

32. Table P2905.4 (Water service pipe) is amended by deleting the following materials:

“Acrylonitrile butadiene styrene (ABS) plastic pipe
Asbestos-cement pipe
Polybutylene (PB) plastic pipe and tubing
Polyethylene (PE) plastic pipe
Polyethylene (PE) plastic tubing
Polyethylene/aluminum/polyethylene (PE-AL-PE) pipe

(Reason: The piping materials listed above are not commonly used in this area. Furthermore, College Station has relatively high water pressure demanding the best water service piping material. This amendment is also consistent with the Plumbing Code)

33. Table P2905.5 (Water distribution pipe) is amended by deleting the following materials:

“Polybutylene (PB) plastic pipe and tubing
Polyethylene/aluminum/polyethylene (PE-AL-PE) composite pipe”

(Reason: The piping materials listed above are not commonly used in this area. Furthermore, College Station has relatively high water pressure, demanding the best water distribution piping material. This amendment is also consistent with the Plumbing Code)

34. Section P2905.5 (Water-distribution pipe.) is amended by adding the following text to the end of the section:

“Inaccessible water distribution piping under slabs shall be copper (minimum type K), cross-linked polyethylene (PEX) tubing, or cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) pipe, all installed without joints or connections. Materials subject to corrosion shall be protected when exposed to concrete or corrosive soils.”

(Reason: This amendment provides an elevated standard for water distribution piping installed under concrete slabs. It is also consistent with the International Plumbing Code.)

35. Section 2905.9.1.4.3 (Sleeved cross-linked polyethylene piping or tubing) is amended by adding the following section:

Sleeved cross-linked polyethylene piping or tubing. “When a sleeve is provided for cross-linked polyethylene (PEX) plastic piping or tubing installed under concrete slabs the annular space between the piping or tubing and the sleeve must be caulked, foamed, or otherwise sealed to prevent the entrance of termiticide.”

(Reason: This amendment provides added protection from liquid chemical termiticides that may enter the void between the sleeve and piping/tubing.)

36. Section P3002.2. (Building sewer) is amended by adding P3002.2.1 to read as follows:

“P3002.2.1 Depth of building sewer. Building sewer pipe shall be installed with a minimum of twelve (12) inches of cover. Where conditions prohibit the required amount of cover, cast iron pipe with approved joints may be used unless other means of protecting the pipe is provided as approved by the Building Official.”

(Reason: When field conditions do not allow at least 12 inches of ground cover over a sewer line, cast iron pipe provides an equivalent level of protection. This amendment is also consistent with provisions in the International Plumbing Code.)

37. Section E3401.1 (applicability) is amended by deleting the section in its entirety and replacing with the following:

“Electrical installations shall comply with the *National Electrical Code*, as adopted and amended by the City of College Station.”

(Reason: The City has adopted the *National Electrical Code* to regulate electrical installations. This amendment also makes the IRC consistent with state law.)

38. Appendix G (Swimming Pools, Spas And Hot Tubs) is hereby adopted